

CLAIMS

What is claimed is:

1. An optical structure film comprising a sheet having a first side and a second side, said first side includes a series of optical elements and said second side includes a series of stepped plateaus and a series of base planes that run along a first axis wherein said plateaus and base planes alternate along a second axis and said plateaus are not coplanar with the base planes.
2. The optical structure film of Claim 1 wherein a difference in height between said plateau and said base plane includes an amount greater than a wave length of visible light.
3. The optical structure film of Claim 1 wherein a difference in height between said plateau and said base plane includes an amount in the range of between about 0.2 and about 2 microns.
4. The optical structure film of Claim 1 wherein the ratio of the area of the base planes to the area of the plateaus are in a range of between about one and about ten.
5. The optical structure film of Claim 1 wherein the base planes have a width in the range of between about one and about three hundred microns.
6. The optical structure film of Claim 1 wherein the plateaus have a width in the range of between about one and about fifty microns.

7. The light collimating film of Claim 1 wherein said linear optical elements include linear prisms that run the width of the sheeting.
8. The light collimating film of Claim 1 wherein said linear optical elements include linear prisms having triangular prisms arranged side-by-side.
9. The light collimating film of Claim 8 wherein said triangular prisms include a top angle in a range of between about sixty and 120 degrees.
10. The light collimating film of Claim 9 wherein said linear prisms include triangular prisms that are isosceles in shape.
11. The light collimating film of Claim 9 wherein said linear prisms include triangular prisms that are scalene isosceles in shape.
12. The light collimating film of Claim 8 wherein said triangular prisms include a top angle in a range of between about sixty and eighty-five degrees.
13. The light collimating film of Claim 8 wherein said triangular prisms include a top angle in a range of between about ninety-five and 120 degrees.
14. The light collimating film of Claim 8 wherein said triangular prisms include a top angle of about eighty-eight degrees.
15. The light collimating film of Claim 8 wherein said triangular prisms include a top angle of about eighty-nine degrees.
16. The light collimating film of Claim 1 wherein said linear optical elements are pitched at regular intervals.

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17. The light collimating film of Claim 1 wherein said linear optical elements include lenticular linear elements.
18. The light collimating film of Claim 1 wherein said linear optical elements are pitched in the range of between about 12.5 and about 6,500 microns.
19. A back lighting display device, comprising:
 - a) a lighting device;
 - b) a display panel; and
 - c) a sheeting having a first side and a second side, wherein said first side includes a series of optical elements, and said second side includes a plurality of stepped plateaus and a plurality of base planes that run along a first axis wherein said plateaus and base planes alternate along a second axis and said plateaus have an elevation different than the base planes.
20. The display device of Claim 19 further comprising a second sheeting having a first side and a second side, wherein said first side includes a series of optical elements, and said second side includes a plurality of stepped plateaus and a plurality of base planes that run along a first axis wherein said plateaus and base planes alternate along a second axis and said plateaus have an elevation different than the base planes.
21. The display device of Claim 19 wherein said linear prisms include triangular prisms having a top angle of about ninety degrees.
22. The display device of Claim 20 wherein said linear prisms include triangular prisms having a top angle of about ninety degrees.

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23. A light collimating structure, comprising:
- a) a first collimating film having a first surface with a plurality of first linear prisms having peaks and a second surface having a plurality of stepped plateaus and a plurality of base planes wherein said plateaus have an elevation different than the base plane, the plateaus and base planes being oriented in parallel relative to the peaks of said first linear prisms; and
 - b) a second collimating film having a first surface with a plurality of second linear prisms having peaks and a second surface having a plurality of stepped plateaus and a plurality of base planes wherein said plateaus have an elevation different than the base plane, the plateau and base planes being oriented in parallel relative to the peaks of said second linear prisms.
24. The light collimating structure of Claim 23 wherein the plateaus of the first collimating film and the plateaus of the second collimating film face each other.
25. A method of forming a light collimating film, comprising:
- forming a series of linear prisms on a first side of a sheeting, the linear prisms including peaks; and
 - forming a plurality of stepped plateaus and a plurality of base planes wherein said plateaus have an elevation different than the base planes on a second side of the sheeting with the plateaus and base planes being oriented in parallel to the peaks of the linear prisms.

26. The method of Claim 25 further comprising the steps of:
- forming a series of linear prisms on a first side of a second sheeting, the linear prisms also including peaks; and
- forming a plurality of stepped plateaus and a plurality of base planes wherein said plateaus have an elevation different than the base planes on a second side of the second sheeting with the plateaus and base planes being oriented in parallel relative to the peaks of the linear prisms.
27. The method of Claim 25 further comprising the step of arranging the first sheeting and second sheeting such that the plateaus of the first sheeting face the plateaus of the second sheeting.

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